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ABSTRACT OF THE DISCLOSURE

An apparatus for survivor path decoding in a Viterbi decoder with a constraint length of K . The apparatus of the invention includes a best survivor unit, a register-exchange network, and a trace-back unit. The best survivor unit receives path metrics of 2^{K-2} local winner states from which a best state is selected every L iterations. Meanwhile, the register-exchange network generates decision vectors of survivor paths leading to 2^{K-1} states at instant i according to decision bits of all states from instant $i-L$ to instant i . Every L iterations the register-exchange network outputs L -bit decision vectors for all states at instant i . Then the trace-back unit stores the decision vectors and finds a global survivor path sequence by following the decision vectors back from the best state at instant $i-L$. In this manner, L decoded bits can be output from the trace-back unit every L iterations.